

SPLIT

Work Order ID 56315 - 1

February 17, 2010 2:36:03 PM

Page 1

Item ID: D3774-1

Accept

Revision ID:

Item Name: Seat Bottom, LH/RH

Start Date: 2/17/10 Start Qty: 4.00

Required Date: 2/24/10 Req'd Qty: 4.00

Reference:

Approvals: Process Plan:

Date: 10-2-17

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start

Stop

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

Draw Nbr

Revision Nbr

D3774

Rev B

100

0.00



HAND FINISHING THERMOFORMING

Thermoform

Memo

0.00

Thermoforming Machine

Set up machine program D3774-1 ☐ Set up clamping frame as per folio

BB 10/02/23

110

0.00



HAND FINISHING THERMOFORMING

Thermoform

Memo

0.00

Thermoforming Machine

Cut Blanks

BB 10/02/23

DRYSHEET IN 10/02/23 4:30 255F  
OUT 255F 6:30AM

120

0.00



THERMOFORMING MACHINE

Thermoform

Memo

0.00

Thermoforming Machine

Thermoform as per Dwg. D3774-1 and Folio ☒ Dwg. Rev.

☒ Folio Rev. C

BB 10/02/24  
X6

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 56315

February 17, 2010 2:36:03 PM



Page 2

Item ID: D3774-1

Accept



Setup Start



Revision ID:

Stop



Item Name: Seat Bottom, LH/RH

Start Date: 2/17/10 Start Qty: 4.00



Cust Item ID:

Required Date: 2/24/10 Req'd Qty: 4.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

130

QC2- Inspect parts off machine FAI/FAIB

0.00



QC

Memo

0.00

Quality Control

BB  
10/02/24  
(X1)

140

HAND FINISHING THERMOFORMING

0.00



Thermoform

Memo

0.00

Thermoforming Machine

Trim to Finished Dimensions

BB  
10/02/24  
(X1)

150

QC2- Inspect parts off machine FAI/FAIB

0.00



QC

Memo

0.00

Quality Control

1) Check dimensions to ensure conformity to drawing tolerances.

BB  
10/02/24  
(X1)

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE		By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



**Work Order ID 56315**

February 17, 2010 2:36:03 PM



Page 3

Item ID: D3774-1

Accept



Setup Start



Revision ID:

Stop



Item Name: Seat Bottom, LH/RH

Start Date: 2/17/10 Start Qty: 4.00



Cust Item ID:

Required Date: 2/24/10 Req'd Qty: 4.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

160



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

B 56315 (4)

0.00

S 10/02/24

(46)

170



Packaging

Packaging

Identify as per dwg &amp; Stock Location: \_\_\_\_\_

0.00

Memo

0.00

Purp 04 (1)

180



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

10/02/24 (4)  
MF  
10-2-24

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

February 17, 2010 2:36:07 PM

Page 1

Work Order ID: 56315



Parent Item: D3774-1



Parent Item Name: Seat Bottom, LH/RH

Start Date: 2/17/10

Required Date: 2/24/10

Comments: IPP REV:A New Issue 08.06.04 DL verified by:DD  
IPP REV. B Dwg. Update 08.08.19 DL

Start Qty: 4.00

Required Qty: 4.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MLEXS.125-F60029-04		Purchased	No			110	sf	586.0519	42.6680			



GE PLASTICS LEXAN SHEET

<u>Warehouse</u> <u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
Main Warehouse		
MAT	586.051898	
103106	1.6765	
105330	37.8767	
109455	40.5717	
111710	265.893632	
112585	240.033366	

BB  
12/02/23  
X6

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



DART AEROSPACE LTD		Work Order:	56315
Description: Seat Bottom		Part Number:	D3774-1
Inspection Dwg: D3774	Rev: B	Page 1 of 1	

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

#### THERMOFORMING SECTION

Description	Accept	Reject	Method of Inspection	Comments
Shape Definition	✓			
Texture Retention	✓			
Material imperfections such as bumps, cracks, voids, scratching	✓			

Measured by:

BB

Date:

10/02/24

#### TRIMMING SECTION

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
1.3	+/-0.100	1.32	✓			
33.9	+/-0.100	33.875	✓			
17.4	+/-0.100	17.5	✓			
0.085	Min	.114	✓			
0.100	Min	.111	✓			
0.100	Min	.118	✓			
0.100	Min	.118	✓			
0.100	Min	.105	✓			

Measured by:

BB

Date:

10/02/24

Audited by:

DL

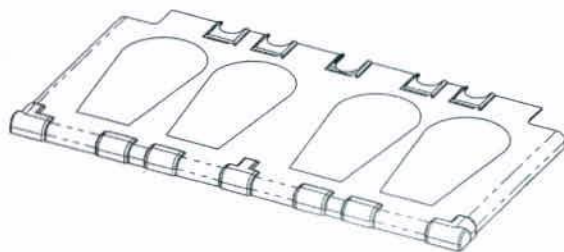
Date:

10/02/24

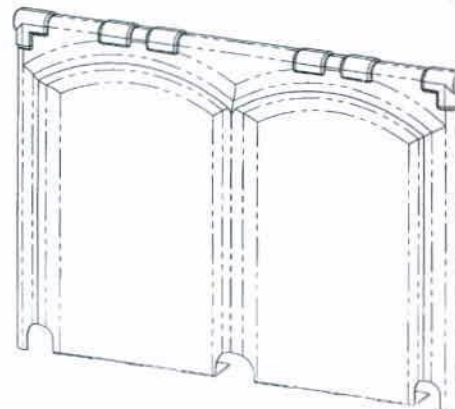
Prototype Approval:

Date:

Rev	Date	Change	Revised by	Approved
A	08.09.04	New Issue	KJ/DL	DL



D3774-1 SEAT BOTTOM



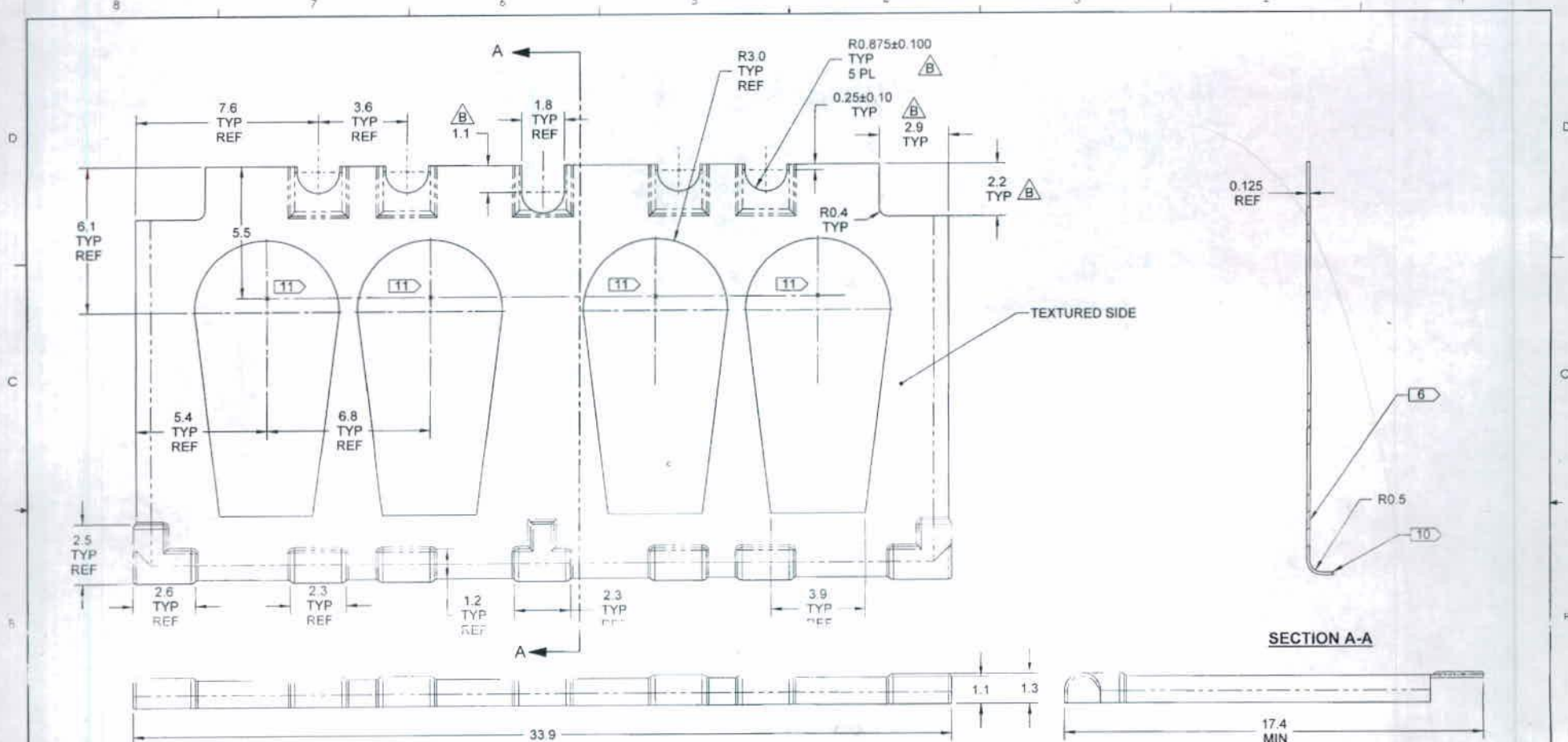
D3774-3 SEAT BACK

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 54315  
BJ10-217

**RELEASED**  
08-08-11

B	UPDATE CUTOUT DIMENSIONS (ZN D4-2, D6-2, C4-3, C7-3); UPDATE MINIMUM THICKNESS (ZN A5-2, A5-3); ADD HOLES ON D3774-3 (ZN B6-3) REASON: MANUFACTURING CAPABILITIES	PH	08.07.25
A	NEW ISSUE	HS	08.06.23
REV.	DESCRIPTION	BY	DATE
DESIGN	HS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	PH		
CHECKED	PH	DRAWING NO.	REV. B
MFG. APPR.	PH	D3774	SHEET 1 OF 3
APPROVED	PH	TITLE	SCALE
DE APPR.	PH	SEAT	NTS
DATE	08.07.25	COPYRIGHT © 2008 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

D3774-21



D3774-1 SEAT BOTTOM

NOTES:

- 1) MATERIAL: F60029 GREY LEXAN SHEET (HEAVY HAIRCELL TEXTURE) 0.125" THICK TEXTURED SIDE UP (REF. DART SPEC MLEXS 125-F60029-04)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D3774-1" USING VIBRATING STYLUS
- 7) WEIGHT: 2.93 lbs
- 8) PART TO BE PRODUCED FROM MOLD DT9022 AND PER DART QSI 022
- 9) OVERALL DIMENSIONS GIVEN ONLY FOR FURTHER INFORMATION REFER TO MOLD DT9022
- 10) MINIMUM MATERIAL THICKNESS AFTER FORMING ON FLANGES (WITHIN 2.0 FROM EDGES) IS 0.085
- 11) MINIMUM MATERIAL THICKNESS AFTER FORMING AT THESE POINTS IS 0.100

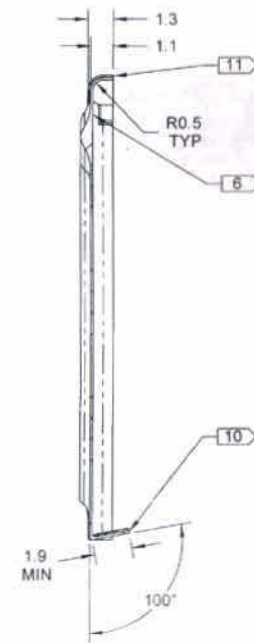
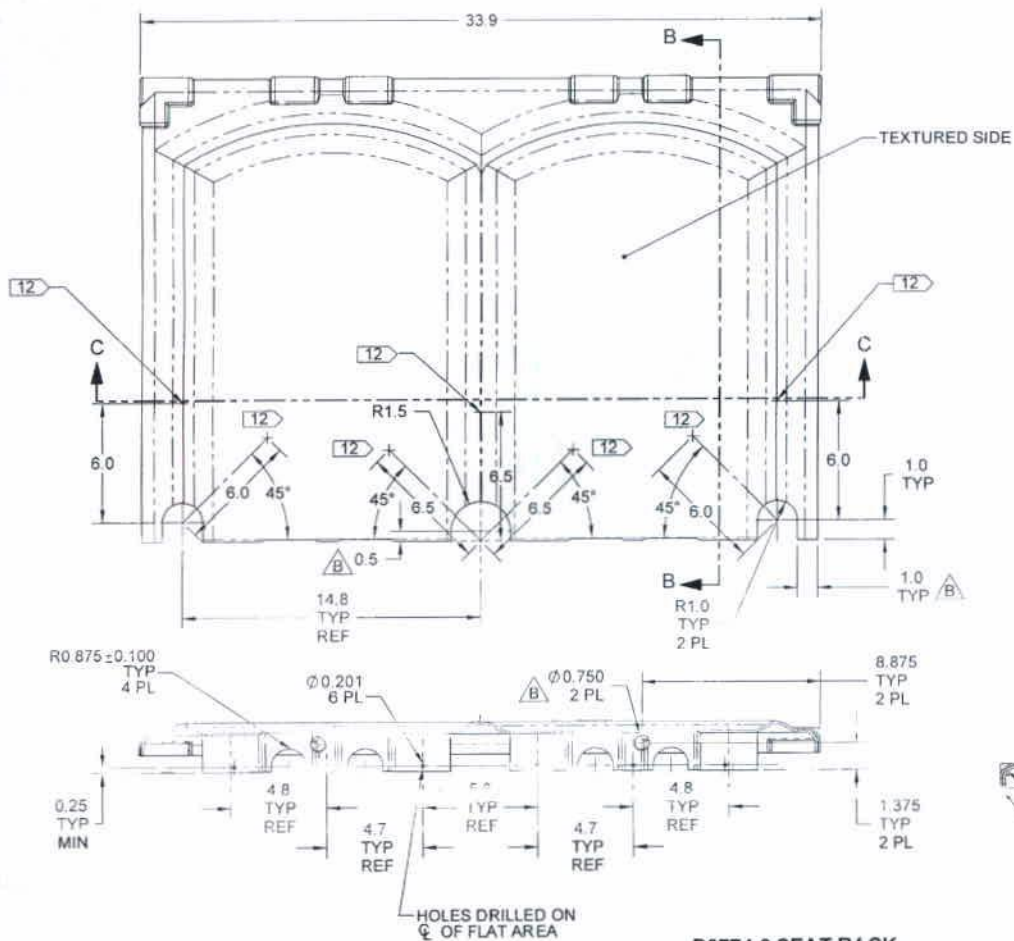
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RELEASED  
02-05-11

DESIGN	HS	DART AEROSPACE LTD	
DRAWN	PH	HAWKESBURY, ONTARIO, CANADA	
CHECKED	PH	DRAWING NO.	REV. B
MFG. APPR.	PH	D3774	SHEET 2 OF 3
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8 7 6 5 4 3 2 1



SECTION B-B



SECTION C-C

D3774-3 SEAT BACK

- NOTES:
- 1) MATERIAL: F60029 GREY LEXAN SHEET (HEAVY HAIRCELL TEXTURE) 0.125" THICK TEXTURED SIDE UP (REF. DART SPEC MLEXS.125-F60029-04)
  - 2) FINISH: NONE
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
  - 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D3774-3" USING VIBRATING STYLUS
  - 7) WEIGHT: 4.82 lbs
  - 8) PART TO BE PRODUCED FROM MOLD DT9023 AND PER DART QSI 022
  - 9) OVERALL DIMENSIONS GIVEN ONLY FOR FURTHER INFORMATION REFER TO MOLD DT9023
  - 10) MINIMUM MATERIAL THICKNESS AFTER FORMING ON BOTTOM FLANGE IS 0.065
  - 11) MINIMUM MATERIAL THICKNESS AFTER FORMING FLANGES (WITHIN 2.0 FROM EDGES) IS 0.085
  - 12) MINIMUM MATERIAL THICKNESS AFTER FORMING AT THESE POINTS IS 0.100

W0 56315

RELEASED  
08-08-11

DESIGN	HS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	HS		
CHECKED	HS	DRAWING NO.	REV. B
MFG. APPR.	HS	D3774	SHEET 3 OF 3
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8 7 6 5 4 3 2 1



**Daryl Leger**

**From:** Jason Murdoch [jmurdoch@dartaero.com]  
**Sent:** Tuesday, February 23, 2010 3:33 PM  
**To:** 'Chris Provencal'; 'Daryl Leger'  
**Cc:** 'Linda Lacelle'  
**Subject:** RE: Manufacturing Polycarbonate

Daryl,  
 Must record.

**Jason Murdoch**  
**Quality Coordinator**  
 jmurdoch@dartaero.com  
 DART Aerospace Ltd.  
 613-632-5200

**From:** Chris Provencal [mailto:cprovencal@dartaero.com]  
**Sent:** February 23, 2010 3:31 PM  
**To:** 'Daryl Leger'  
**Cc:** 'Jason Murdoch'; 'Linda Lacelle'  
**Subject:** RE: Manufacturing Polycarbonate

I'm OK with making the seat bottoms, the existing folio should be followed.

Should record:

**Drying**

- The time when sheets were placed in the oven
- Temperature
- Time when removed

**Forming**

- Time when sheet formed
- Mold Temp
- Sheet Temp just before molding
- Release Temp

Plus whatever dimensions and additional checks that are normally measured.

- Chris

**From:** Daryl Leger [mailto:dleger@dartaero.com]  
**Sent:** February 23, 2010 2:16 PM  
**To:** cprovencal@dartaero.com  
**Cc:** Jason Murdoch; Linda Lacelle  
**Subject:** Manufacturing Polycarbonate  
**Importance:** High

Chris:

Linda is in dire need for at least 1 D3774-1 aft facing seat bottom. We have an order for 4 so I would like to make a total of 5.

Because we have had discussion on parameters for manufacturing and have a sense of where we want to be with this, I would like to produce these for her tomorrow morning using the outlined parameters listed below.

We will dry the 0.125" lexan sheet at the recommended temperature of 255 deg. F., overnight for 15hrs. (The recommended time

2/24/2010

*Took 1 hr 45 to get ideal part*

*V. TIGHT - 60 - 4 HOLD. 258.  
 TIGHT - 75 - 4 HOLD. 270  
 Just - OK - 75 - 273  
 No GRAB. - 67 - 280  
 Too Hot. - 67 - 282*

*Sheets @ 73 F @ start.*

#1	2	3	4	5	6
8:00	8:30	8:29	8:46	8:58	9:11
230F	234	239	227	239	230
340	340	340	340	340	340
258	270	273	280	282	279

is about 10 hrs. for 4 mm sheet, but there is no sense in having someone come in early just to remove the sheet. )  
We will form them on a mould preheated to approx 240deg.F., then cool without fans to a surface temperature of approx. 270 deg. F. at which time they will be parted from the mould.  
All other existing info on the folio and IPP will not change.

We will document the added steps and requirements on the WO.

Are you OK with this.

**RSVP**

*Daryl L. Leger*

Production Engineering Co-ordinator

**DART**

**aerospace**

TEL: 613-632-5200

FAX: 613-632-1426

EMAIL: [dleger@dartaero.com](mailto:dleger@dartaero.com)